

Application Number 09/975,522
Responsive to Office Action mailed January 13, 2006

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A computer networking device for use on a computer network connecting a plurality of clients with a single physical server device, the clients and physical server device being configured to communicate using Hypertext Transfer Protocol (HTTP), the computer networking device comprising:

an HTTP multiplexor/demultiplexor configured to receive HTTP requests from the plurality of clients via a plurality of client TCP connections and to monitor response parameters that are specific to individual ones of a plurality of server TCP connections from the computer networking device to the physical server device,

wherein the HTTP multiplexor/demultiplexor includes a plurality of agents, each agent assigned to a different one of the client TCP connections, and

wherein upon receiving an HTTP request from the client, the respective agent selects one of the plurality server TCP connections based on the monitoring of the response parameters specific to the server TCP connections and routes the HTTP request to the selected server TCP connection for communication to the physical server device over a corresponding socket on the physical server device, as a multiplexed HTTP request.

Claim 2 (Currently Amended): The computer networking device of claim 1, wherein the multiplexor/demultiplexor is further configured to receive multiplexed HTTP responses from the physical server device over the individual server TCP connection and to route those responses to the clients via a plurality of client TCP connections.

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Claim 3 (Currently Amended): A computer networking method for processing HTTP requests, the method comprising:

monitoring a plurality of ~~sockets~~ server TCP connections from a computer networking device to a single physical server device to determine a response parameter that is specific to ~~for~~ each of the server TCP connections;

receiving HTTP requests from a plurality of originating clients; and

selecting one of the server TCP connections based on the determined response parameter;

routing the HTTP requests to an individual network socket on the physical server device via a multiplexed TCP transmission using the selected server TCP connection.

Claim 4 (Previously Presented): The method of claim 3, wherein the response parameter is selected from the group consisting of least-lengthy response time, last-accessed socket, fewest number of unfulfilled requests, type of requested data, and size of requested data.

Claim 5 (Currently Amended): The method of claim 3, further comprising:

receiving HTTP responses from the physical server device via the individual server TCP connection; and

selectively routing the HTTP responses to the plurality of originating clients.

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Claim 6 (Currently Amended): A computer networking method for data transfer between plural originating clients, a single physical server device, and a networking device positioned on a computer network intermediate the clients and the physical server device, the method comprising:

at the networking device,

monitoring a plurality of server TCP connections from a the computer networking device to a the physical server device to determine a response parameters that are specific to ~~for~~ each of the server TCP connections;

listening for HTTP requests from the originating clients;

receiving HTTP requests from more than one of the originating clients;

selecting one of the server TCP connections based on the determined response parameter;

multiplexing the received requests for delivery to the physical server device via the selected server TCP connection; and

sending the received requests via the selected server TCP connection to an optimal server socket on the physical server device, wherein the optimal server socket is selected based on the determined response parameter.

Claim 7 (Original): The method of claim 6, wherein receiving HTTP requests from the originating clients occurs via client TCP connections.

Claim 8 (Original): The method of claim 7, wherein the client and server TCP connections are persistent.

Claim 9 (Cancelled).

Claim 10 (Currently Amended): The method of claim 9~~6~~, wherein the response parameter comprises a least-lengthy response time.

Claim 11 (Currently Amended): The method of claim 9~~6~~, wherein the response parameter comprises a last-accessed server socket.

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Claim 12 (Currently Amended): The method of claim 9, wherein the response parameter comprises the fewest number of unfulfilled requests.

Claim 13 (Previously Presented): The method of claim 6, further comprising listening for multiplexed HTTP responses from the optimal server socket.

Claim 14 (Original): The method of claim 13, further comprising receiving HTTP responses from the optimal server socket.

Claim 15 (Original): The method of claim 14, further comprising demultiplexing the received HTTP responses to permit selective routing and transmission of the received responses to corresponding originating clients.

Claim 16 (Original): The method of claim 15, further comprising sending the HTTP responses to the corresponding originating clients.

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Claim 17 (Currently Amended): A computer networking method for data transfer between plural originating clients, a single physical server device and an intermediate networking device, wherein the originating clients and the server are configured to communicate over a computer network via the intermediate networking device, the method comprising:

at the intermediate networking device,

monitoring a plurality of server TCP connections from the intermediate networking device to the server to determine a response parameter that is specific to each individual one ~~for each~~ of the server TCP connections;

listening for HTTP requests from the originating clients;

receiving HTTP requests from more than one of the originating clients;

multiplexing the received requests;

determining an optimal server socket based on the determined response parameter;

sending the received requests as a multiplexed transmission to the optimal server socket via an individual one of the server TCP connections;

listening for HTTP responses from the physical server device;

receiving HTTP responses from the physical server device;

demultiplexing the HTTP responses received from the physical server device to permit selective routing and transmission to corresponding originating clients; and

sending the received HTTP responses to the corresponding originating clients.

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Claim 18 (Currently Amended): A computer networking device for use on a computer network to improve data transfer, the computer networking device being positioned intermediate plural clients and a single physical server device, the clients and physical server device being configured to communicate via the computer network using HTTP communication protocol, the computer networking device comprising:

an HTTP multiplexor/demultiplexor configured to receive HTTP requests from the clients via a plurality of client TCP connections and to monitor response parameters that are specific to individual ones of a plurality of server TCP connections to the physical server device,

wherein the HTTP multiplexor/demultiplexor includes a plurality of agents, each agent assigned to a different one of the client TCP connections, and

wherein upon receiving an HTTP request from the client, the respective agent selects one of the plurality server TCP connections based on the monitoring of the server TCP connections and routes the HTTP request to the selected server TCP connection for communication to the physical server device, the computer networking device being further configured to receive HTTP responses from the physical server device and route the received HTTP responses to a corresponding one of the clients.

Claim 19 (Cancelled).

Claim 20 (Currently Amended): The device of claim ~~19~~ 18, wherein the server TCP connections are persistent.

Claim 21 (Previously Presented): The device of claim 18, wherein the HTTP multiplexor/demultiplexor is further configured to determine an optimal server socket for receiving the HTTP requests by identifying the server TCP connection having the least-lengthy response time based on the monitoring.

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Claim 22 (Currently Amended): A computer networking system for use with a computer network, the system comprising:

a physical server device;

plural clients configured to connect to the physical server device system via the computer network; and

a computer networking device positioned intermediate the physical server device and the clients on the computer network;

wherein the computer networking device is configured to monitor response parameters that are specific to individual ones of a plurality of server TCP connections from the computer networking device to the physical server device, and

wherein the computer network device comprises a plurality of agents, each agent assigned to a different one of a plurality of client TCP connections from the computing networking device to the clients, and

wherein the agents receive HTTP requests from the clients and distribute those requests via multiplexed transmission over the server TCP connections to a server socket on the physical server device system selected based on the response parameters determined by monitoring the server TCP connections.

Claim 23 (Currently Amended): The computer networking system of claim 22, wherein the computer networking device is further configured to receive HTTP responses from the physical server device system via a multiplexed transmission, demultiplex the responses, and route the multiplexed responses to corresponding clients via a plurality of client TCP connections.

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Claim 24 (Currently Amended): A computer networking device for improving data transfer via a computer network, the device being configured to monitor a plurality of persistent server socket connections from the computer networking device to a single physical server device to determine a response parameter that is specific to ~~for~~ each of the server socket connections, receive HTTP requests from a client, determine an optimal one of the server sockets for each HTTP request based on the respective response parameters for each of the server sockets, and to send each HTTP request to the determined optimal server socket for the request via a multiplexed TCP transmission.

Claim 25 (Currently Amended): The device of claim 24, wherein the device is further configured to receive an HTTP response from the optimal server socket and to send the HTTP response to the client.